Method for holistic optimization of the manufacturing process

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This research concerns a new approach of the optimization problem, intending to turn into profit the last evolutions from IT domain. The method for holistic optimization successively addresses the optimized object at different levels of its description. The main application domain is the manufacturing process from "Make to Order" environment, which is difficult to optimize because of dealing with a wide range of products.

The "holistic optimization" defining is that:
- *The optimization area* covers the entire life-cycle of optimization object. When this object is the manufacturing process, the life-cycle is comprised between product ordering (by the client) and product delivering (to the client).
- *The optimization goal* is to satisfy all optimization aspects, namely:
    - the best formalization of the optimization request;
    - the best tooling for assessing the position of a potential solution relative to optimization goal;
    - the best solution for the optimization problem.
- *The optimization action* consists, in the manufacturing process, in the continuous assurance of the optimization of the flow of decisions controlling a manufacturing process in progress.

Description of the method:
- According to our approach, the optimization means to ensure the manufacturing process optimality in each moment.
- This can be done by optimizing the flow of decisions through which the manufacturing process ongoing is controlled
- During this control, the optimization desiderate should be considered as reference, while the decision means the control variable.
- The process optimization has to be supported by an optimality assurance system, embedded in the currently existing quality assurance system.

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